

**REMARKS**

For the convenience of the reader of the specification, Applicants have amended Paragraph 32 of the specification to recite: "In FIGS. 2b, 3b, 4b, 5b, 6b, and 7b, the "thickness" direction is oriented from left to right (i.e., parallel to the top surface of the hard mask film 208) and the " height" direction is oriented upward (i.e., perpendicular to the top surface of the hard mask film 208)." The preceding clarifications of thickness and height are consistent with the manner in which the words " thickness" and " height" are used throughout the specification. Thus no new matter has been introduced by the preceding amendment of Paragraph 32.

The Examiner stated that claims 10 and 11 are allowed. Applicants gratefully acknowledge the Examiner's indication of allowable subject matter.

The Examiner objected to claims 10-11, stating: "Claims 10-11 are objected to because of the following informalities: Claim 10, line 3, delete "single-crystal" for clarifying the scope of the claim. Appropriate correction is required." In response, Applicants have amended claim 10, by deleting "single-crystal" in line 3 of claim 10.

The Examiner rejected claims 2, 21-22, 29 and 30-33 under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement.

The Examiner rejected claims 1, 3 and 4 under 35 U.S.C. §102(b) as allegedly being anticipated by Ting (U.S. Pat. 5,838,032).

The Examiner rejected claim 6 under 35 U.S.C. §103(a) as allegedly being unpatentable over Ting (U.S. Pat. 5,838,032) previously applied, as applied to claim 1 above, and further in view of Pan (U.S. Pat. 6,300,653) newly cited.

The Examiner rejected claims 7-8 under 35 U.S.C. §103(a) as allegedly being

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unpatentable over Ting (U.S. Pat. 5,838,032) previously applied, as applied to claim 1 above, and further in view of Inoue et al. (U.S. Pat. 6,407,442) previously applied.

The Examiner rejected claims 20, 22, and 24-25 under 35 U.S.C. §103(a) as allegedly being unpatentable over Ishii (U.S. Pat. 6,627,936) newly cited, in view of Ting (U.S. Pat. 5,838,032) previously applied.

The Examiner rejected claim 27 under 35 U.S.C. §103(a) as allegedly being unpatentable over Ishii (U.S. Pat. 6,627,936) newly cited, in view of Ting (U.S. Pat. 5,838,032) previously applied, as applied to claim 20 above, and further in view of Inoue et al. (U.S. Pat. 6,407,442) previously applied.

The Examiner rejected claims 32-33 under 35 U.S.C. §103(a) as allegedly being unpatentable over Ting (U.S. Pat. 5,838,032) previously applied, as applied to claim 1 above, and further in view of Natsume (U.S. Pat. 5,356,826) newly cited.

Applicants respectfully traverse the §112, §102 and §103 rejections with the following arguments.

**35 U.S.C. §112, First Paragraph**

The Examiner rejected claims 2, 21-22, 29 and 30-33 under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention."

The Examiner alleges: "Claims 2 and 21, the phrase "a first interconnect disposed adjacent one of the top surface, the first side surface, and the second side surface of the second side surface of the Fin structure" is not described in the specification nor shown in the figure." In response, Applicants refer to the **originally filed** claim 2 which recites: "The capacitor of claim 1, further comprising at least one first interconnect disposed adjacent one of the top surface, the first side surface, and the second side surface of the at least one Fin structure." Moreover Applicants refer to Paragraph 57 of the specification, which recites: "Continuing with step 112, interconnects, contacts, wiring layers (located above the device level), etc. may then be produced in metallization steps known in the art. Accordingly, sources, drains, and electrodes may be contacted by way of a local interconnect(s) where, for example, interconnects may be disposed adjacent conductor layer 212 portions, and/or interconnects may be disposed adjacent the top surfaces, the first side surfaces, and/or the opposing second side surfaces of the sources or drains (doped exposed portions of the Fins)" (Emphasis added). Accordingly, the preceding evidence demonstrates that Applicants had possession of the claimed invention at the time the application was filed with respect to claims 2 and 21.

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The Examiner alleges: "Claim 29, the phrase "a thickness of the insulator structure is about equal to the thickness of the Fin structure, said thickness of the insulator structure being oriented in a same direction as said thickness of the Fin structure" is not described in the specification nor shown in the figure." In response, Applicants refer to the right half of FIG. 7b, which shows that the thickness of the insulator structure 208 is about equal to the thickness of the Fin structure 206, where thickness is measured from left to right (i.e, parallel to the top surface of the Applicants refer to the right half of FIG. 7b, which shows that the thickness of the insulator structure 208). See claim 20 which states that "said thickness of the Fin structure being a distance between the first and second side surfaces of the Fin structure" in consistency with the present amendment of Paragraph 32 of the specification. Applicants interpret the left and right side surfaces of FIN structure 206 as being the first and second side surfaces of the Fin structure in claim 20. In light of FIG. 7B, the clarification supplied by claim 20, and the amendment of Paragraph 32 of the specification, Applicants maintain that Applicants had possession of the claimed invention at the time the application was filed with respect to claim 29.

The Examiner alleges: "Claims 30-33, the phrase "an insulation film on the first surface of the Fin structure ... the upper surface of the insulator structure" is not described in the specification. The scope of the claim is not clear because "a height of an upper, lower surfaces of the insulator structure or the insulator layer" cannot be defined." In response, Applicants refer to the amendment of Paragraph 32 of the specification which states that the height direction is in the upward direction of FIGS. 2b, 3b, 4b, 5b, 6b, and 7b (i.e., in a direction that is oriented

perpendicular to the top surface of the hard mask film 208 of FIG. 2b). In light of what "height" means, Applicants maintain that it is clear that the upper surface of the insulator structure of claims 30-33 is embodied in the top surface of the insulator structure 208. Thus, Applicants maintain that Applicants had possession of the claimed invention at the time the application was filed with respect to claims 30-33.

**35 U.S.C. §102(b): Claims 1, 3, and 4**

The Examiner rejected claims 1, 3 and 4 under 35 U.S.C. §102(b) as allegedly being anticipated by Ting (U.S. Pat. 5,838,032).

Applicants respectfully contend that Ting does not anticipate claim 1, because Ting does not teach each and every feature of claim 1. For example, Ting does not teach "a conductor structure adjacent the insulator structure, wherein all conducting material on a top surface of the insulator structure is continuously distributed on the top surface of the insulator structure and is comprised by the conductor structure".

The Examiner has argued that the insulator structure 24 and the conductor structure 25 in FIG. 6 of Ting is pertinent to claim 1. In response, Applicants note that all of the conducting material that is on the insulator structure 24 in FIG. 6 of Ting is distributed as multiple portions of the conductor structure 25 which are discontinuously distributed on the insulator structure 24. Thus claim 1 does not read on Ting.

Based on the preceding arguments, Applicants respectfully maintain that Ting does not anticipate claim 1, and that claim 1 is in condition for allowance. Since claims 3 and 4 depend from claim 1, Applicants contend that 3 and 4 are likewise in condition for allowance.

Similarly, Applicants respectfully maintain that new claim 34 is likewise in condition for allowance, since new claim 34 depends from claim 1. Applicants note that the Examiner's argument that Ting discloses that the thickness of the Fin structure is inherently greater than 40 nm because the height of the Fin structure is from 270 to 330 nm is not persuasive. Applicants respectfully note that the thickness and height of the Fin structure are oriented in mutually

orthogonal directions and are independent of each other.

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**35 U.S.C. §103(a): Claim 6**

The Examiner rejected claim 6 under 35 U.S.C. §103(a) as allegedly being unpatentable over Ting (U.S. Pat. 5,838,032) previously applied, as applied to claim 1 above, and further in view of Pan (U.S. Pat. 6,300,653) newly cited.

Since claim 6 depends from claim 1, which Applicants have argued *supra* is not anticipated by Ting, Applicants maintain that claim 6 is not unpatentable over Ting in view of Pan.

In addition, the Examiner argues: "Ting substantially discloses all the limitations as claimed above except a height range of the Fin structure between 10nm and 160nm. However, Pan discloses the height range of the Fin structure (34) between 10nm and 160nm (see col. 4, lines 45-46). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to select the height range of the Fin structure as taught by Pan into the device of Tin to form the Fin structure. It is noted that the height range would have been obvious to an ordinary artisan practicing the invention because, absent evidence of disclosure of criticality for the range giving unexpected results, it is not inventive to discover optimal or workable ranges by routine experimentation. *In re Alter*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955)."

In response to the preceding argument by the Examiner, Applicants respectfully contend that it is not routine experimentation to optimize a variable unless it was known in the prior art at the time Applicants' invention was made that the variable at issue is a result effective variable. See *In re Antonie*, 559 F.2d 618, 195 U.S.P.Q. 6 (C.C.P.A. 1977). Since the Examiner has not provided evidence that the prior art recognized that the height range of the Fin structure is a result effective variable, Applicants respectfully contend that the Examiner has not established a



*prima facie* case in relation to claim 6.

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**35 U.S.C. §103(a): Claims 7-8**

The Examiner rejected claims 7-8 under 35 U.S.C. §103(a) as allegedly being unpatentable over Ting (U.S. Pat. 5,838,032) previously applied, as applied to claim 1 above, and further in view of Inoue et al. (U.S. Pat. 6,407,442) previously applied.

Since claim 7 has been canceled, the rejection of claim 7 is moot.

As to claim 8, since claim 8 depends from claim 1, which Applicants have argued *supra* is not anticipated by Ting, Applicants maintain that claim 8 is not unpatentable over Ting in view of Inoue.

In addition, the Examiner argues: "With respect to claim 8, as discussed in details above, Ting substantially discloses all the limitations as claimed above except a FinFET is disposed on the substrate, the FinFET having a gate electrode coupled to said conductor structure. However, Inoue et al. discloses that the FinFET (110 or 111) is disposed on the substrate (101), the FinFET having a gate electrode (105) coupled to said conductor structure (105a) (see fig. 13). Therefore, it would have been obvious to one having skill in the art to include the FinFET disposed on the substrate and the FinFET having a gate electrode coupled to the conductor structure in the Ting's device in order to operate the device."

In response, Applicants respectfully contend that the Examiner's argument for modifying Ting by the FinFET allegedly disclosed by Inoue is not persuasive. The Examiner argued that the modification of Ting is obvious in order to operate Ting's device. Applicant's contend that it is not necessary to have a FinFET disposed on Ting's substrate in order to operate Ting's device. Applicant's request that the Examiner provide a citation in Ishii to demonstrate that it is necessary to have a FinFET disposed on Ting's substrate in order to operate Ting's device.

Based on the preceding argument, Applicants respectfully contend that the Examiner has not established a *prima facie* case in relation to claim 8.

**35 U.S.C. §103(a): Claims 20, 22, and 24-25**

The Examiner rejected claims 20, 22, and 24-25 under 35 U.S.C. §103(a) as allegedly being unpatentable over Ishii (U.S. Pat. 6,627,936) newly cited, in view of Ting (U.S. Pat. 5,838,032) previously applied.

Applicants respectfully contend that claim 20 is not unpatentable over Ishii in view of Ting, because Ishii in view of Ting does not teach or suggest each and every feature of claim 20. For example, Ishii in view of Ting does not teach or suggest the feature: "an insulator layer such that an entire bottom surface of the Fin structure is in direct mechanical contact with a top surface of the insulator layer". The Examiner has not even alleged that Ishii in view of Ting teaches or suggests the preceding feature of claim 20. Since the Examiner has not presented any argument relating to the preceding feature of claim 20, Applicants respectfully contend that the Examiner has not established a *prima facie* case in relation to claim 20.

Based on the preceding arguments, Applicants respectfully maintain that claim 20 is not unpatentable over Ishii in view of Ting, and that claim 20 is in condition for allowance. Since claims 22 and 24-25 depend from claim 20, Applicants contend that claims 22 and 24-25 are likewise in condition for allowance.

In addition with respect to claim 22, Applicants respectfully contend that although the Examiner has alleged that Ting discloses the second interconnect claimed in claim 22, the Examiner has not provided evidence that the prior art suggests motivation for modifying Ishii by the second interconnect allegedly disclosed by Ting. Accordingly, Applicants respectfully contend that the Examiner has not established a *prima facie* case in relation to claim 22.

In addition, Applicants respectfully contend that Ishii in view of Ting does not teach or suggest the claimed thickness and height range of the Fin structure of claim 24 and 25, respectively. The Examiner argues: "With respect to claims 24-25, Ishii does not teach the exact thickness and height range of their Fin structure, as claimed by Applicant. However, the thickness and height range would have been obvious to an ordinary artisan practicing the invention because, absent evidence of disclosure of criticality for the range giving unexpected results, it is not inventive to discover optimal or workable ranges by routine experimentation. *In re Alter*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955)."

In response to the preceding argument by the Examiner, Applicants respectfully contend that it is not routine experimentation to optimize a variable unless it was known in the prior art at the time Applicants' invention was made that the variable at issue is a result effective variable. See *In re Antonie*, 559 F.2d 618, 195 U.S.P.Q. 6 (C.C.P.A. 1977). Since the Examiner has not provided evidence that the prior art recognized that thickness and height range of the Fin structure are result effective variables, Applicants respectfully contend that the Examiner has not established a *prima facie* case in relation to claims 24 and 25.

**35 U.S.C. §103(a): Claim 27**

The Examiner rejected claim 27 under 35 U.S.C. §103(a) as allegedly being unpatentable over Ishii (U.S. Pat. 6,627,936) newly cited, in view of Ting (U.S. Pat. 5,838,032) previously applied, as applied to claim 20 above, and further in view of Inoue et al. (U.S. Pat. 6,407,442) previously applied.

Since claim 27 depends from claim 20, which Applicants have argued *supra* is not unpatentable over Ishii in view of Ting, Applicants maintain that claim 27 is not unpatentable over Ting in view of Ting and further in view of Inoue.

In addition with respect to claim 27, Applicants respectfully contend that the Examiner's argument for modifying Ishii by the FinFET allegedly disclosed by Inoue is not persuasive. The Examiner argued that the modification of Ishii is obvious in order to operate Ishii's device. Applicant's contend that it is not necessary to have a FinFET disposed on Ishii's substrate in order to operate Ishii's device. Applicants request that the Examiner provide a citation in Ishii to demonstrate that it is necessary to have a FinFET disposed on Ishii's substrate in order to operate Ishii's device. Based on the preceding argument, Applicants respectfully contend that the Examiner has not established a *prima facie* case in relation to claim 27.

**35 U.S.C. §103(a): Claim 32-33**

The Examiner rejected claims 32-33 under 35 U.S.C. §103(a) as allegedly being unpatentable over Ting (U.S. Pat. 5,838,032) previously applied, as applied to claim 1 above, and further in view of Natsume (U.S. Pat. 5,356,826) newly cited.

Since claims 32-33 depend from claim 1, which Applicants have argued *supra* is not anticipated by Ting, Applicants maintain that claims 32-33 are not unpatentable over Ting in view of Natsume.

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**CONCLUSION**

Based on the preceding arguments, Applicants respectfully believe that all pending claims and the entire application meet the acceptance criteria for allowance and therefore request favorable action. If the Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicants invites the Examiner to contact Applicants' representative at the telephone number listed below.

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